What Is Claimed Is:

1. A method for separating and purifying a nucleic acid, comprising a step of:

adsorbing and desorbing a nucleic acid to and from a membrane of an organic macromolecule which has a membrane thickness of 10 μm to 500 μm.

2. The method according to claim 1, wherein the organic macromolecule is an organic macromolecule having a hydroxyl group on surface thereof.

3. The method according to claim 1, wherein the organic macromolecule is surface-saponified acetylcellulose.

4. The method according to claim 1, wherein the organic macromolecule is surface-saponified triacetylcellulose.

5. The method according to claim 3, wherein the surface-saponification rate of acetylcellulose is 5% or higher.

6. The method according to claim 3, wherein the surface-saponification rate of acetylcellulose is 10% or higher.

7. The method according to claim 2, wherein acetylcellulose is a porous film.

8. The method according to claim 2, wherein acetylcellulose is a non-porous film.

9. The method according to claim 1, wherein the nucleic acid in a sample solution is adsorbed to and desorbed from the membrane of organic macromolecule which has a membrane thickness of 10 μm to 500 μm.

10. The method according to claim 9, wherein the sample solution is a solution prepared by adding a water-soluble organic solvent to a solution obtained by treating a cell- or virus-containing test sample with a nucleic acid-solubilizing reagent.

11. The method according to claim 10, wherein the nucleic acid-solubilizing reagent is a guanidine salt, a surfactant and a proteolytic enzyme.

12. The method according to claim 1, comprising steps of:

adsorbing the nucleic acid to a membrane of the organic

macromolecule;

washing the membrane using a nucleic acid-washing buffer; and

desorbing the nucleic acid adsorbed to the membrane by using a liquid capable of desorbing the nucleic acid adsorbed to the membrane.

13. The method according to claim 12, wherein the nucleic acid-washing buffer is a solution containing 20 to 100 % by weight of methanol, ethanol, isopropanol or n-propanol.

14. The method according to claim 12, wherein the liquid capable of desorbing the nucleic acid adsorbed to the membrane is a solution having a salt concentration of 0.5 M or lower.

15. The method according to claim 1, wherein adsorption and desorption of the nucleic acid is carried out by using an unit for separation and purification of nucleic acid in which a container having at least two openings contains a membrane of the organic macromolecule which has a membrane thickness of 10μm to 500μm.

16. The method according to claim 1, wherein adsorption and desorption of the nucleic acid is carried out by using an unit for separation and purification of nucleic acid which comprises (a) a membrane of the organic macromolecule which has a membrane thickness of 10μm to 500μm, (b) a container having at least two openings and containing the membrane, and (c) a pressure difference-generating apparatus connected to one opening of the container.

17. The method according to claim 16, comprising steps of:

(a) preparing a sample solution containing a nucleic acid by using a test sample and inserting one opening of an unit for separation and purification of nucleic acid into said sample solution containing the nucleic acid;

(b) sucking the sample solution containing the nucleic acid by making an inside of the container in a reduced pressure condition by using the pressure difference-generating apparatus connected to the other opening of the unit for

separation and purification of nucleic acid, and contacting the sample solution to a membrane of the organic macromolecule which has a membrane thickness of 10 μm to 500 μm;

(c) making the inside of the container in a pressurized condition by using the pressure difference-generating apparatus connected to the other opening of the unit for separation and purification of nucleic acid, and discharging the sample solution containing the sucked nucleic acid to an outside of the container;

(d) inserting one opening of the unit for separation and purification of nucleic acid into the nucleic acid-washing buffer;

(e) sucking the nucleic acid-washing buffer by making the inside of the container in the reduced pressure condition by using the pressure difference-generating apparatus connected to the other opening of the unit for separation and purification of nucleic acid, and contacting the nucleic acid-washing buffer to the membrane;

(f) making the inside of the container in the pressurized condition by using the pressure difference-generating apparatus connected to the other opening of the unit for separation and purification of nucleic acid, and discharging the sucked nucleic acid-washing buffer to the outside of the container;

(g) inserting one opening of the unit for separation and purification of nucleic acid into the liquid capable of desorbing the nucleic acid adsorbed to the membrane;

(h) making the inside of the container in the reduced pressure condition by using the pressure difference-generating apparatus connected to the other opening of the unit for separation and purification of nucleic acid, and sucking the liquid capable of desorbing the nucleic acid adsorbed to the membrane to contact the liquid to the membrane; and

(i) making the inside of the container in the pressurized condition by using the pressure difference-generating apparatus connected to the other opening of the unit for

separation and purification of nucleic acid, and discharging the liquid capable of desorbing the nucleic acid adsorbed to the membrane to the outside of the container.

18. The method according to claim 16, comprising steps of:

(a) preparing a sample solution containing the nucleic acid using a test sample and injecting said sample solution containing the nucleic acid into one opening of the unit for separation and purification of nucleic acid;

(b) making the inside of the container in the pressurized condition by using the pressure difference-generating apparatus connected to said one opening of the unit for separation and purification of nucleic acid, and discharging the injected sample solution containing the nucleic acid from the other opening to contact the sample solution to a membrane of the organic macromolecule which has a membrane thickness of 10μm to 500μm;

(c) injecting the nucleic acid-washing buffer into said one opening of the unit for separation and purification of nucleic acid;

(d) making the inside of the container in the pressurized condition by using the pressure difference-generating apparatus connected to said one opening of the unit for separation and purification of nucleic acid, and discharging the injected nucleic acid-washing buffer from said other opening to contact the nucleic acid-washing buffer to the membrane;

(e) injecting the liquid capable of desorbing the nucleic acid adsorbed to the membrane into said one opening of the unit for separation and purification of nucleic acid; and

(f) making the inside of the container in the pressurized condition by using the pressure difference-generating apparatus connected to said one opening of the unit for separation and purification of nucleic acid, and discharging the liquid capable of desorbing the injected nucleic acid from said other opening, so as to desorb the nucleic acid adsorbed

to the membrane and discharge the nucleic acid to the outside of the container.